THE RELATIONSHIP OF PERSONAL AND NEIGHBORHOOD CHARACTERISTICS TO IMMIGRANT FERTILITY*

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Abstract

We find that fertility varies by immigrant generation, with significant declines between the first and subsequent generations for groups with large immigrant population. However, we find that personal characteristics--such as educational attainment, marital status, and income levels--are much more important than immigrant generation in understanding fertility outcomes. In fact, generations are not independently important once these personal characteristics are controlled for. We maintain that declining fertility levels among the descendants of Mexican and Central American immigrants are primarily the result of higher educational attainment levels, lower rates of marriage, and lower poverty. For example, a four-year increase in educational attainment decreases children ever born (CEB) by half a child. We conclude that immigrant generation serves as a proxy for changes in other personal characteristics that decrease fertility. Neighborhood characteristics have some bearing on fertility, but the correlations are relatively weak. Among Mexican and Central American immigrants and their descendants, the most consistent predictor of children ever born (CEB) at the neighborhood level is the percentage of Hispanic adults. However, no neighborhood characteristics bear any statistical relationship to current fertility, the measure that emphasizes recent births. This pattern of evidence suggests that the observed relationships between neighborhood characteristics and fertility are based on selection into the neighborhood rather than on neighborhood influences as such.

Key Words: Immigrant Fertility, Personal Characteristics, Neighborhood Characteristics.

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This paper addresses two primary questions about immigrant fertility. The first question addressed in the paper is how do fertility rates vary by immigrant generation? The answer to this question is important for two reasons. First, variations in fertility by immigrant generation will directly impact national and state population projections. Projections developed by the Census Bureau and by the California Department of Finance are used by numerous federal, state, and local agencies in planning for the future, and thus their accuracy is important. Currently, state population projections treat the racial and ethnic groups with the largest immigrant populations homogeneously. There is one set of fertility projections for Hispanics, and one for Asians. We will show that refining these fertility estimates to incorporate fertility patterns specific to generations of immigrants may yield different population projections. Apart from their ability to refine population projections, fertility estimates by generation also provide important clues about the assimilation or adaptation process among first and successive generations of immigrants. Fertility rates are just one of many important measures of adaptation such as educational attainment, English language acquisition, and labor force outcomes.

The second question addressed in this paper considers why fertility rates vary: How can we explain variation in fertility between immigrant generations? In particular, we consider the role of personal characteristics, such as education and marital status, and neighborhood characteristics. Examining the role of neighborhoods is important for two reasons. The first is that in some parts of the country, large population of Hispanics and patterns of residential segregation have led to increasing residential concentrations of Hispanics. This is especially true in California, but may be similar to levels of concentration in parts of the Southwest and some urban centers nationally. If such

relationships do exist, they could have a large effect. Secondly, previous research has shown that in highly segregated neighborhoods, segmented assimilation, or assimilation to a less integrated, segment of society can occur. Numerous studies have found relationships between neighborhood concentrations and cultural or economic assimilation (e.g., Portes and Rumbaut 1996 and Light et al. 1993). We propose that a similar relationship may exist for fertility and ethnic communities. Research that focuses on neighborhood characteristics generally (without a specific focus on ethnic enclaves) has found relationships between these characteristics and a variety of social and economic outcomes. For example, some research has found a relationship between the level of poverty in a community and high school dropout rates (Patterson 2000). Yet, little analysis has been done on fertility patterns by neighborhood in the U.S. Such studies are more common in the developing regions of the world, but are generally small in scale and rely heavily, if not exclusively, on ethnographic data.

Previous Research

Previous Research on the Role of Immigrant Generation

The determinants of fertility behavior are diverse, and include social norms and culture as well as economic factors. Place of birth (nativity) is known to be an important predictor of fertility. Fertility patterns of immigrants have been intensely scrutinized in recent research largely because immigrants have higher fertility than natives, which implies immigrants and their offspring may change the racial and ethnic composition of the nation.

Research undertaken in the 1990s (primarily relying on data from the 1980s) shows that there is great variation in fertility patterns for immigrants by place of birth,

length of residence in the U.S., socio-economic characteristics, and generation. Ford (1990) finds that immigrants who have resided in the U.S. longer have both lower current and cumulative fertility than recent arrivals (controlling for age). Kahn (1994) shows that current immigrants to the U.S. have fertility expectations more similar to natives the longer they have resided here. Latin-American and Mexican women have decreasing fertility expectations with length of residence in the U.S. while Asian and European immigrants have higher fertility expectations the longer they reside in the U.S. Native born descendants of Mexican immigrants have lower fertility than the current generation of the Mexican-born (Stephen and Bean 1992; Bean, Swicegood, and Berg, 1998). Both Blau (1992) and Kahn (1994) find that after adding controls such as education, age, marital status (Blau) and income, education and ethnicity (Kahn), immigrants actually have lower current fertility than do natives. Bean et al. (1998) find that the third and successive generations of immigrants have higher fertility than the second.

This research suggests that treating immigrants and their descendants as a homogenous group would lead to incorrect estimates of future fertility patterns, and consequently, unlikely estimates of future group population size. This suggestion is especially strong for women of Mexican and Central American descent living in the U.S.

Previous Research on the Role of Neighborhoods

Most research on neighborhoods, social networks, and fertility has focused on the transmission of information about birth control and health technology. Generally, this research is ethnographic and has small sample sizes. It is still evolving, and has not yet focused a great deal on fertility per se. None of this research has considered the role of

immigrants' communities in the U.S. as a determinant of the level and pace of childbearing after arrival. Recent research in the study of fertility has emphasized the diffusion and social learning about fertility goals and norms, suggesting that this area is ripe for exploration. There has been a call among demographers to consider the relationship among community and ideas about family size and fertility behavior more generally. Forste and Tienda (1996) note that an individual's reference group may matter in determining fertility change. Of course, immigrants may not change their reference group if they settle in communities in the U.S. similar to those from which they emigrated. The maps later in the chapter demonstrate that such communities could exist in California for Mexicans and Central Americans. Consequently, these immigrants may not have lower fertility as their time in the U.S. increases.

High school drop out rates, teen pregnancy, earnings, and other measures of "success" have also been studied vis-à-vis their relationship to neighborhood characteristics. Early studies consider the role of individual characteristics on the outcome of interest, and then add measures of the neighborhood to estimation models. This early research generally found strong relationships between neighborhoods characteristics and the outcomes of interest. However, researchers began to recognize that the characteristics that influence choice of neighborhood may be strongly linked to individual or family characteristics, but may be unmeasurable.

Even the refinements of this research suggest that the relationship between neighborhood and outcomes at the individual level are not always straightforward. [1] Our

[1] See Brooks-Gunn et al 1993, Plotnick and Hoffman 1999, Patterson (2000), Evans, Oates, and Schwab (1992), Katz et al 1999 and Ludwig et al 1998 cited in Patterson 2000 for detail on how unobservable characteristics may be accounted for in neighborhood research, and how doing so may reduce the association between neighborhood characteristics and individual outcomes.

research will control for both neighborhood and personal characteristics. We will not be able to demonstrate whether neighborhoods directly cause observed fertility patterns or are merely associated with them. Because our primary interest in any relationship between fertility and neighborhood is in exploiting it to inform population projections, this question of causality is not of concern in this research.

Data, Sample, and Methods

Data for this research comes from two sources: two years of the June Fertility Supplements to the Current Population Survey (1995 and 1998) and the 1990 Decennial Census. To explore the role of both personal and neighborhood characteristics, we link these two data sources. Because CPS samples of immigrant populations are small, we limit our analysis to the single largest group of immigrant women: those of Mexican and Central American descent.

We group Mexican and Central American women together because their fertility patterns, language, and socioeconomic characteristics are similar enough to justify doing so. We do exclude Hispanics of other places of origin, such as Puerto Rico and Cuba, because their fertility levels,[2] settlement patterns, and socioeconomic characteristics are so different. Although we study immigrants and successive generations from Mexico and Central America for the entire U.S., we focus attention on the fertility patterns in California because of their concentration here.

Once we have restricted the sample for our study to women aged 15 to 44 of Mexican and Central American descent, we further divide the sample into generations.

[2] In 1998, CEB for Cuban-born women in the U.S. was 1.28, for Puerto Rican women, it was 1.87, and for Mexican women it was 2.01.

Members of the first generation are those born in Mexico or Central America. This group is further divided into the 1.0 generation (those arriving in the U.S. at age 10 or older) and the 1.5 generation (those arriving in the U.S. before age 10). The second generation is defined as those born in the U.S. to a parent born in Mexico or Central America. The third generation consists of those born in the U.S. whose parents were also born in the U.S. and who self-identify as being of Hispanic of Mexican, Central American, or South American descent.[3]

We rely on the Current Population Survey (CPS) to document these fertility differences by immigrant generation and to explicate these differences using detailed immigration, demographic, and socioeconomic data for individual women. The CPS is a national survey of approximately 50,000 households (5,000 in California) collected monthly, but includes data on fertility only occasionally. Here we use data from two months of the CPS that collect data on both fertility and nativity: June 1995 and 1998. The CPS allows us to calculate CEB but does not have enough observations to permit the calculation of fertility data more commonly used by demographers (Total Fertility Rates or TFRs).

The second source of data used in this research is the 1990 decennial census. Census data supply information about neighborhood characteristics, which we then link to individual-level data (fertility levels, nativity, and socioeconomic characteristics) in the CPS. Public files of the CPS do not contain the information required to make links between individuals and their neighborhoods. Because we were able to obtain special

[3] It is impossible to separate 3rd generation Central and South American Hispanics from one another in this data set. Based on the small numbers of 1st generation women from South America in California, we assume the majority of 3rd generation Central or South American Hispanics in California are Central American.

permission to use the internal (non-public) files of the 1995 and 1998 CPS data, we are able to create a unique data set that contains fertility and nativity information for individuals and data for the neighborhoods (census tracts) in which they reside. No other study of fertility patterns in neighborhoods has been undertaken on a statewide or national scale.

There are two concerns about the use of the 1990 Census data to measure the relationship between neighborhood and fertility: we use census tracts to proxy for neighborhoods, and the neighborhood and fertility data were not collected in the same year.

Regarding the first concern, our measures for neighborhoods are at the census tract level. States and counties are divided into census tracts, which are intended to be no more than 6000 residents on average. Tracts are smaller than zip codes, but larger than census block groups. In 1990, the state of California had 5858 tracts. Although the census does disaggregate data to smaller levels of geography, such as census block groups and census blocks, this level of geographic detail is not available in the CPS data. In many cases, the tract may be larger than a true "neighborhood," but block groups would probably be too small.

Both the sizes of tracts and the percentage Hispanic among them in 1990 vary tremendously. Here, we focus on some urban and rural areas of California. The San Francisco Bay Area shows clear variation among Census tracts in the percentages Hispanic (Figure 1). One can locate the Mission District in San Francisco by following the tracts of increasing concentrations of Hispanics from Daly City to San Francisco along Mission Street. Similarly, the concentration of Hispanics in San Jose is clearly

observed in the Southeast quadrant of the map. Many of these tracts are geographically quite small – a collection of a few city blocks at most, and are readily considered neighborhoods. In the Los Angeles area, tracts range from 0 – 14 percent to 75 to 100% Hispanic, but there are large regions of Los Angeles where nearly all the tracts are over 75 percent Hispanic (Figure 2). The individual tracts are relatively small, but where other similar tracts surround them, there are large regions in which the vast majority of residents are Hispanic. The rural areas in the San Joaquin Valley have much larger tracts than do urban ones (Figure 3). However, even some of these large tracts have concentrations of Hispanics upwards of 75 percent, and while the area of the tract is large, the population of the tract may be centralized. Despite the large area a tract may cover, there still may a sense of "neighborhood" even in rural areas.

Regarding the second concern, our neighborhood data from 1990 is five to eight years older than the fertility data we analyze. We might expect a lag between entering a neighborhood and any observed relationship between the neighborhood and fertility levels for an individual.

To create this unique data set, the individual fertility and nativity data from the CPS are merged with the tract level neighborhood data from the Census using the census tract identifier in each. Whenever data are matched or merged, some data are likely to be lost. In this case, approximately 93 percent of our sample was retained after the matching process. Most of the 7 percent of individual cases from the CPS that did not successfully match with Census data failed to do so because tract identifiers were not recorded in the CPS. Furthermore, the unmatched cases were not appreciably different in demographic characteristics such as race and ethnicity or nativity, nor were they different in terms of

our key fertility variable of interest, children ever born. The details of this data merge are explained in Appendix A.

In the remainder of this paper, we analyze a variety of fertility data, employing different methods and using different fertility measures. We chart CEB by detailed generational status. Next, we explore in tabular analysis whether the fertility patterns observed by generation seem to be associated with generational differences in personal or neighborhood characteristics. Finally, we use multivariate regression techniques to control for generation, personal characteristics, and neighborhood characteristics simultaneously. The results of these multivariate analyses are presented graphically.

Fertility Rates by Immigrant Generation for Mexicans and Central Americans

The relationship between immigrant generation and fertility can be further explored with Current Population Survey data. This data allows for the specific identification of first generation immigrants, second generation immigrants, and third and subsequent generation immigrants. Sample sizes are not large enough to support analyses for Asians, but are sufficient to consider the case of Mexicans and Central Americans, the nation's largest immigrant group.

Large differences between first and second generation immigrants are evident (Figure 4). Surveys conducted in the 1980s (1986 and 1988) and in the 1990s (1995 and 1998) show that the average number of children ever born to Mexican and Central American immigrants was almost a full child higher than for second generation

descendants of such immigrants.[4] Fertility levels were slightly lower in the 1990s than in the 1980s, but only marginally so.

The average CEB for third and subsequent generation descendants was also substantially lower than first generation immigrants, but was marginally higher than for the second generation. The higher levels for the third and subsequent generation could be a consequence of the identification of third generation descendants of Mexican and Central American immigrants. Because we did not have data on grandparents' nativity, we used responses to an ancestry question to identify third and subsequent generation descendants. It is likely that women who identify as of Mexican or Central American ancestry have higher fertility than women who have at least one grandparent born in Mexico or Central America but who do not identify as of Mexican or Central American ancestry.[5]

We can also identify fertility patterns for immigrants who came to the United States as young children. The fertility rates of these immigrants, often referred to as the "1.5 generation", can be expected to differ from immigrants who come to the U.S. as young adults. Specifically, members of the 1.5 generation are much more likely to have their attitudes about fertility shaped by their experience in the United States than in their countries of origin. Fertility levels for the 1.5 generation are in fact much lower than for first generation immigrants who arrived in the United States as preteens and adults (Figure 5).

[4] We have adjusted these averages for age group differences. We do so through a technique known as 'age standardization.' We chose the entire female population of California as our standard, using five year age groups for women aged 15 to 44. Contact the authors for further details.

[5] Hispanic self-identity is associated with lower socioeconomic status (Portes and MacLeod 1996, Eschbach and Gomez 1998), and lower socioeconomic status is associated with higher fertility.

What Drives Differences in Fertility Rates by Immigrant Generation?

Next, we attempt to understand why fertility varies by generation. In particular, we include a rich array of socio-economic characteristics measured at both the individual and neighborhood level to explore these relationships among the largest immigrant group in California: those of Mexican and Central American descent. After examining differences in personal and neighborhood characteristics by generation and type of neighborhood, we use these differences to predict CEB numbers.

Personal Characteristics

Age is one of the most important correlates of fertility, and it continues to be included in each of our analyses. Ethnicity, or the self-identification as Hispanic, is potentially important in estimating fertility as well. We expect to find that those who self-identify as Hispanic will have, on average, higher levels of fertility relative to those who do not. Finally, marital status is an important correlate of fertility. Although non-marital fertility has been increasing in recent decades, current levels are still far below marital fertility.

Among the variables that measure immigration experience, we expect each to be correlated with higher levels of fertility. We consider whether or not Spanish is the only language spoken in the home and expect that to be a measure of integration in the wider community. Those that speak only Spanish could be expected to maintain the higher

levels of fertility more prevalent in a community of origin. Similarly, we would expect that those who have spent fewer years in the U.S would have higher levels of fertility.[6]

Our socioeconomic variables include measures of poverty and education. We expect that the poor will have higher levels of fertility, and that higher levels of educational attainment and current school enrollment will correlate with lower levels of fertility. Measures of income and employment are not considered due to the endogenous nature of these two measures with women's fertility.[7]

Neighborhood Characteristics

Our measures of neighborhood characteristics are from the 1990 decennial census at the census tract level. Census tracts are commonly used in other data collection efforts as well, and have the particular advantage for this research of being used in the Current Population Survey data collection.

Data from these census tracts could have been incorporated into our study of immigrant fertility in several ways. Many other researchers have designated a threshold level of neighborhood ethnic concentration or neighborhood "quality" that they consider important. To protect the confidentiality of the individuals in the CPS data, the Census Bureau preferred that we use variables that are continuous rather than a threshold measure. Another option is to create a scale that combines all of the neighborhood characteristics that could be relevant. The third approach, and the one that we use in this research, is to allow all the relevant variables that describe the neighborhood to enter separately into our fertility model.

[6] In the regression models that follow, we only include an indicator for whether or not the individual is a recent immigrant.
[7] See Becker (1981) for a discussion of the price and income effect of women's wages on fertility.

We considered a number of measures of neighborhood characteristics that may be relevant in predicting fertility for our sample, and ultimately settled on five:

- percentage of adults that are Hispanic,
- percentage of immigrants that arrived with in the last 5 years,
- percentage of Hispanics in poverty,
- percentage of women working, and
- percentage of adults that are Asian or Pacific Islander (API).

We expect the first two measures to capture the degree to which the neighborhood was cohesive and similar to the immigrant's community of origin. We include the percentage of Hispanics in poverty because individual fertility is strongly associated with income at the individual and aggregate level. Previous research on neighborhoods (Patterson 2000) has found that the poverty rate of one's own reference group is more important in determining outcomes (such as teen pregnancy and high school drop out rates) than is the poverty rate for all residents of the tract. We include the percentage of women working in the neighborhood because the labor force participation of women is negatively associated with fertility at the individual level, and we expected that it may also be relevant at the neighborhood level. If most women work, that fact can signal individual fertility levels as well as preferences in that neighborhood for large family sizes. We also considered the percentage of Asian adults in the community because there may be different peer group effects associated with that sort of neighborhood composition.

We also considered the percentage of adults who are foreign-born,[8] the percentage of neighborhood residents who are Hispanic, and the percentage of neighborhood residents who speak no English, but these were excluded because the correlations among them were too high (Table 1). For example, neighborhoods that are highly Hispanic (by

[8] This measure includes persons of all nativities.

either the overall measure or the percentage of adults that are Hispanic) are very likely to have a high proportion of foreign-born residents and a high proportion of residents who speak no English (with correlations of 0.63 and 0.79, respectively). The correlations among the variables we selected are all less than 0.55.

Generation, Personal Characteristics, and Neighborhood Characteristics

The relationships between immigrant generations, neighborhoods, and fertility have not yet been explored in the U.S. We begin to tackle this question by examining characteristics of individuals by generation--both personal characteristics and the characteristics of their neighborhoods.[9] Later, we attempt to control for immigrant generation, personal characteristics, and neighborhood characteristics simultaneously.

As we saw earlier, CEB varies by generation: mean CEB falls from generation 1.0 to the second generation, but increases somewhat from second generation to third generation. In this table, we can examine whether it is variation in personal characteristics or in neighborhood characteristics that are associated with decreasing fertility by generation. Can these fertility patterns be explained by differences in personal and neighborhood characteristics by immigrant generation?

Based on the mean personal characteristics of generations 1.0, we would expect them to have high levels of fertility. The women of the 1.0 generation are older and the most likely to be married; nearly one third speak only Spanish in their households, and they have been in the U.S. for the shortest periods of time (Table 2). Over half live in

[9] Appendix B addresses concerns about sample clustering in the data that arise from linking individual data to neighborhood data.

poverty, they have the lowest levels of educational attainment, and they are the least likely to be employed. There are large differences between the 1.0 and 1.5 generations on each of these dimensions, which may explain why the 1.5 generation has lower fertility: they are less likely to be married, less likely to identify as Hispanic, more likely to speak English in their homes, and they have been in the U.S. longer.

There are few differences among the 1.0 and 1.5 generation on neighborhood characteristics, although there are large differences between the 1.0-generation and the second and third generations. Compared to second and subsequent generations of Hispanics, the 1.0 and 1.5 generation live in neighborhoods with higher percentages of Hispanic adults (more than half live in neighborhoods that are at least 30 percent Hispanic), higher percentages of adults who speak no English, and higher percentages foreign-born residents, and of those, a higher percentage who arrived within the last five years. There are no real differences in neighborhood female employment or poverty rates for any of the generations.

The second generation has the lowest observed CEB values. Its members are the most likely to never marry and the least likely to self-identify as Hispanic (77 percent). Very few of the second-generation women reside in households where only Spanish is spoken. In terms of socioeconomic status, the values observed for the second generation are also suggestive of lower levels of fertility. They are the most likely to be enrolled in school and have mean levels of educational attainment on par with the third generation (12 years), although a greater percentage have not completed high school and a greater percentage have at least some college. The second generation is nearly as likely to be

employed as the third generation (despite higher levels of school enrollment), and have low levels of poverty relative to the 1.0 and 1.5 generation.

The notable differences between the second and third generations are found primarily in the demographic characteristics. Third-generation women are slightly older (28 versus 25 years), and are more likely to be currently or previously married. The socioeconomic variables provide a bit of a puzzle. Their values suggest that the third generation should have lower levels of fertility than any of the other generations; these women are the least likely to be in poverty, the most likely to be currently working, and their levels of educational attainment equal to those of the second generation. However, they have the highest average levels of CEB.

The neighborhoods in which second and third generation women live provide little additional insight on this point. In general, there are few differences between the generations in the characteristics of their neighborhoods. Third-generation women live in neighborhoods where the poverty rate is slightly higher (24 percent versus 22 percent), but on all other measures, we would expect neighborhood conditions to be associated with lower levels of fertility. Third-generation women live in neighborhoods where English is more prevalent, where the percentage of foreign-born residents is lower, and where the percentage of immigrants who are recent arrivals is lower.

Some key personal characteristics vary tremendously by generation, especially between the first and second generations and the second and third generations. The same is true for neighborhood characteristics: as generation increases, the percentage of Hispanic residents in the neighborhood, the percentage of adults who speak English, and

the percent of adults who are immigrants decrease. From this analysis alone, it is not clear what explains fertility patterns for any of the generations.

Without considering the characteristics of the individual and their neighborhoods simultaneously, we cannot tell a priori which characteristics might dominate the relationships we observe in Figure 4 and in Table 2. The first generation has much higher fertility than the others, and both personal characteristics and neighborhood characteristics appear to be associated with the subsequent decline in fertility. Only by including all of these measures simultaneously in a fertility model can we understand which, if any, characteristics dominate and whether neighborhood data could serve as a useful tool in population projections.

Predicted Children Ever Born

To better understand the relationships among individual characteristics, neighborhood characteristics, and individual fertility levels, we estimate multivariate models to predict CEB for women aged 15 to 44 and of Mexican or Central American descent.[10]

All Generations Combined

We begin predicting CEB by using the personal characteristics we discussed in above. Table D-1 shows these results in the column headed Model 1. Because CEB is a measure that accumulates with age, we take care to model age appropriately by including

[10] The estimates described in this section result from models using Ordinary Least Squares. We also predict CEB using generalized Poisson regressions, and Appendix C explains the merits of each type of regression. Results from both OLS and Poisson estimation are presented in Appendix D.

a squared term and interactions with other key variables.[11] Similarly, because educational attainment proved to be such a powerful predictor of CEB, we have interacted it with other personal characteristics and have created variables to measure for any possible role of educational thresholds: having a high school diploma or having at least some college education.

As a result of the multiple interaction terms, it is nearly impossible to read the tables presented in Appendix D and understand the relationship of any particular variable to CEB. We therefore describe most of our results with the assistance of graphs. However, there are a few important things to note from Table D-1. Controlling for personal characteristics, we find that each generation has higher CEB than generation 1.0, which is in sharp contrast to the results presented in Figure 4 and Table D-2. We conclude, therefore, that generational membership itself is not uniquely related to fertility, but that variation in personal characteristics by generation matters. We also find that age, marital status, education, and poverty status are all important predictors of CEB. However, Hispanic ethnicity, school enrollment, speaking Spanish only in the household, and being a California resident do not appear to be important.[12]

Next, we add our measures of neighborhood characteristics to our estimates of CEB (Model II in Table D-1). We find that neighborhood characteristics do not provide much predictive value.[13] Only two measures of neighborhoods are statistically significant: the percentage Hispanic adults and the percentage of Asian and Pacific Islander adults.[14]

[11] Other estimates also included age^3 and age^4 as well as interactions of age^2 with the other personal characteristics, but these additional age variables did not add explanatory power to the model.
[12] We also estimated models using CPS sample weights, but the results were identical. See DuMouchel and Duncan (1983) for a complete discussion on the role of stratified sample weights in multivariate estimation.
[13] The measure of the overall fit of the model (adjusted R-squared) changes very little with the addition of the neighborhood variables, moving from 0.468 to 0.469.
[14] However, the five neighborhood variables are jointly significant.

Both appear to have a negative (although slight) relationship with CEB – as the percentage of each increases, CEB decreases.

We find that age, marital status, education, and poverty are still the most important predictors of CEB even after including neighborhood measures. The net effect of being either currently married or previously married is a level of CEB nearly 0.75 higher than if a woman is never married. We display the contribution of educational attainment and poverty to CEB graphically. If a woman were to increase her educational attainment from eight to 12 years or from 12 to 16 years, CEB falls by 0.5 (Figure 6).[15] Poverty status bears a similar relationship to CEB; moving above the poverty threshold lowers CEB by 0.5 (Figure 7).[16]

The sum of personal characteristics is much more important than the sum of neighborhood characteristics in predicting CEB. Variations in neighborhood characteristics are associated with small changes in CEB relative to similar variations in personal characteristics (Figure 8). The first bar plots CEB values for women with average personal characteristics (e.g., age 29, married, with 11 years of education) and living in an average neighborhood (e.g., 36 percent Hispanic and 51 percent of women working). By varying neighborhood characteristics one standard deviation in either direction, we find that CEB changes 0.4 (the difference between the second and third bars). When we vary personal characteristics one standard deviation in either direction, we find a much larger change in CEB: 3.5. Thus, we find that personal characteristics

[15] Holding all other characteristics constant, and at their average values.
[16] Ibid.

dominate neighborhood characteristics in their relationship with CEB, and that personal characteristics drives the CEB differences by generation we observed earlier.[17]

Each Generation Separate

Because it seems likely that the effects of changes in personal and neighborhood characteristics are likely to depend on the generation, we predict CEB for each generation separately. The results of the estimates for each generation are displayed in Table D-2.[18]

We find that different measures of neighborhood characteristics are important depending on immigrant generation. In generation 1.0, higher percentages of Hispanic and Asian or Pacific Island adults are associated with lower levels of CEB. This result is statistically significant and consistent with what we observed in the overall model (Table D-1).[19] In generation 2, increases in the percentage of Hispanic adults and the percentage of women working are associated with lower CEB, although the latter is more than twice as important than the former.[20] None of the neighborhood variables is statistically significant for either Generation 1.0 or Generation 3.

We find that the same personal characteristics that were important in estimating CEB for all generations combined are also important when CEB is estimated for each generation separately (Table D-2). Age, educational attainment, poverty status, and marital status are all significantly related to CEB. Only Hispanic self-identity, current school enrollment, and speaking Spanish only are not statistically significant. There are

[17] Results of predictions of more recent fertility (births within the last 5 years) found even weaker relationships between neighborhood characteristics and fertility. Results are available from the authors by request.
[18] We find that the model fits much better for Generations 1.5, 2.0, and 3.0 than it does for Generation 1.0. The later three have adjusted R-squared measures of approximately 0.5, while the adjusted R-squared measure for Generation 1.0 is only 0.36.
[19] The neighborhood variables are jointly significant at the 5 percent level.
[20] The neighborhood variables are not jointly significant.

two important differences among the generations, however. First, being a recent immigrant (arrived within the last 5 years) in the first generation suppresses CEB by -0.36. In generation 3.0, residing in California is associated with higher CEB (0.18), although it is not important for any other generation.

Educational attainment is clearly important to CEB levels, and its relationship changes somewhat by generation. In Figure 9, we plot CEB by both generation and 1-year levels of educational attainment while holding all other personal and neighborhood characteristics at their average values. As a result, we find that there are important threshold effects in moving from an 11th grade education to a high school diploma and from a high school diploma to at least one year of college. These thresholds appear to be associated with approximately equal reductions in CEB for generations 1.5, 2 and 3. Generation 1.0 CEB does not appear to be as responsive to the high school diploma threshold, but it is to the "some college' threshold. At every level, however, it is the CEB of the third generation that is most responsive to increases in educational attainment. CEB for generation 1.0 is the least responsive to such increases.[21]

Poverty status is also associated with statistically significant differences in CEB for every generation (see Figure 10). It appears that Generation 2 has the weakest relationship between poverty status and CEB, but it is still relatively large – moving from poor to non-poor is associated with a reduction in CEB of 0.35. For each of the other generations, the reduction in poverty is associated with a reduction in CEB of half a child.

[21] The 1.5-generation has the lowest simulated CEB values because sample means (rather than the values specific to the 1.5 generation) were used. Table 4-2 shows the actual values of CEB for each generation. This figure illustrates the responsiveness of each generation to educational attainment rather than demonstrating actual CEB values.

The sum of personal characteristics has a stronger relationship to CEB than does the sum of neighborhood characteristics for every generation. For each generation, we present CEB for the average woman in the average neighborhood (Figure 11). In the next bar, we present net changes in CEB that result from changing personal characteristics one standard deviation in either direction. The next bar present the results of the converse exercise – we hold personal characteristics at their mean level and vary neighborhood characteristics a standard deviation in either direction. We find that CEB is extremely responsive to these changes in personal characteristics at the generation level. Generations 1.0, 1.5, and 3 all exhibit changes in CEB of 3.0 or greater. Generation 2 exhibits a change in CEB of 2.2. CEB is also responsive to changes in neighborhood characteristics, although much less so than for changes in personal ones. In each case, changes in CEB are under 1.0. It appears from this exercise that the generation 1.5 is the most responsive to the neighborhood environment[22]. They were only statistically significant for generations 1.0 and 2.

Conclusion

When we consider the joint relationships among immigrant generation, personal characteristics, neighborhood, and fertility for women of Mexican and Central American descent, we find that generation serves as a proxy for changes in other personal characteristics that are associated with decreases in fertility. In fact, after considering a wide array of personal characteristics -- such as educational attainment, marriage, ethnicity, and family economic resources -- we discover that fertility would have risen

[22] None of the neighborhood variables was statistically significant for that generation, but this is likely due to the smaller sample size (n=369) of generation 1.5.

slightly from first to third generation if not for the concurrent increase in educational attainment, decrease in poverty, and decreases in the percentage ever married. However, generational status remains a useful proxy for fertility decline and can be used to inform population projections.

Neighborhood characteristics bear some relationship to fertility, but that relationship was not nearly as strong as we had anticipated; their effects on fertility were consistently weaker than those of personal characteristics. The most consistent predictor of fertility at the neighborhood level is the percentage of adults who are Hispanics. Given that the primary relationships we observe between neighborhood and fertility are for CEB rather than more recent fertility (which is more likely to have occurred in the current neighborhood), this finding suggests that the relationship we observe is more likely based on selection into the neighborhood rather than on the effects of neighborhood characteristics as such on fertility change. In any case, we conclude that the relationships between neighborhood characteristics and fertility are insufficient to justify using immigrant settlement patterns as a method to refine population projections.

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Table 1 Correlation Matrix of Neighborhood Variables in tracts with CPS Observations

	% Hispanic	% Adults Hispanic	% Adults API	% Foreign Born	% Speak No English	% Immigrants arrived 5 yr	% Hispanics in Poverty	% Women Working
% Hispanic	1.00	1.00	-0.07	0.63	0.79	0.13	0.40	-0.50
% Adults Hispanic		1.00	-0.07	0.65	0.80	0.11	0.37	-0.50
% Adults API			1.00	0.39	0.18	0.22	-0.13	0.16
% Foreign Born				1.00	0.90	0.38	0.21	-0.23
% Speak No English					1.00	0.36	0.33	-0.41
% Immigrants arrived 5 yrs						1.00	0.13	0.00
% Hispanics in Poverty							1.00	-0.54
% Women Working								1.00

Table 2 Mean Characteristics of Individuals and their Neighborhood by Generation
(Mexican and Central American Women 15 to 44 living in the U.S.)

	Generation 1	*Generation 1.5*	*Generation 2*	*Generation 3*
Fertility Levels [α]				
CEB	2.11	1.18	1.00	1.37
Current Fertility	0.54	0.41	0.34	0.33
Personal Characteristics [α]				
Demographic				
Age	31	25	25	28
Race				
White	84%	87%	87%	87%
Non-White	16%	13%	13%	13%
Ethnicity				
Hispanic	96%	91%	77%	100%
Non-Hispanic	4%	9%	23%	-
Marital Status				
Currently Married	69%	40%	34%	40%
Previously Married	10%	8%	9%	14%
Never Married	21%	51%	57%	47%
Immigration				
Language				
Spanish is only language spoken	29%	13%	5%	1%
Spanish not only language spoken	71%	87%	95%	99%
Years in U.S.	10	20	-	-
Arrival year for immigrants				
Recent (within 5 years)	27%	1%	-	-
Not Recent	73%	99%	-	-
Socioeconomic Status				
Poverty Status				
In Poverty	51%	42%	34%	32%
Above Poverty	49%	58%	66%	68%
Employment				
Currently Employed	44%	46%	51%	55%
Not Employed	56%	54%	49%	45%
Years of Education	9	11	12	12
Educational Thresholds				
Less than HS diploma	65%	48%	40%	34%
HS diploma	21%	26%	25%	33%

[α] Source: 1995 and 1998 Fertility Supplement to the Current Population Survey

Some college +	14%	26%	35%	33%
School Enrollment				
Currently Enrolled	2%	13%	19%	10%
Not Enrolled	98%	87%	81%	90%
Neighborhood Characteristics [β]				
% of Adults that are Hispanic	39	37	33	32
% of Adults that are API	5	5	5	4
% of Hispanics in Poverty	25	24	22	24
% of Women Working	50	51	51	51
% No English Spoken	15	13	11	7
% Foreign-born	29	25	21	14
% Recent Immigrants	28	26	22	20
% Enclave resident	58	55	49	47
State of Residence				
California	47%	47%	37%	23%
Other	53%	53%	63%	77%
Year of Survey				
1995	50%	45%	46%	48%
1998	50%	55%	54%	52%
Observations	1,611	369	679	1,202

Source: 1995 and 1998 June Supplement to the Current Population Survey and 1990 Decennial Census

[β] Source: 1990 Decennial Census

Figure 1

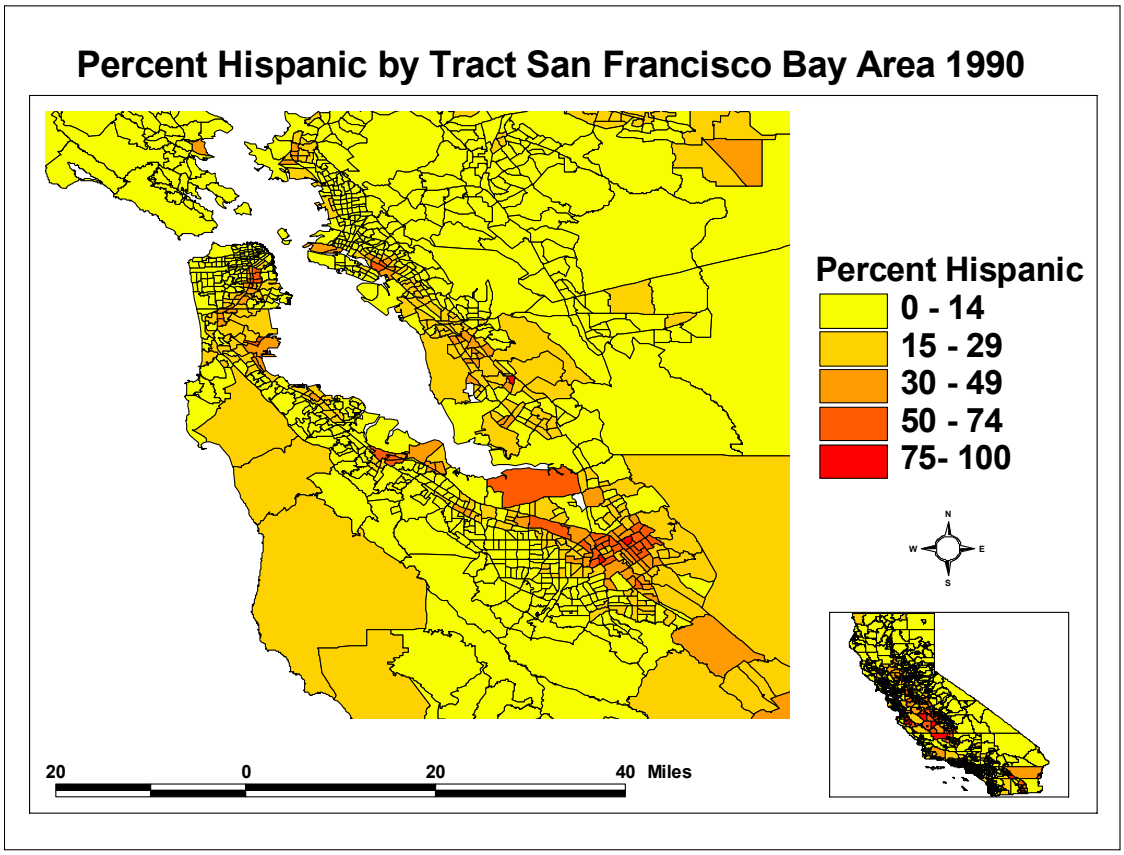

Percent Hispanic by Tract San Francisco Bay Area 1990
Percent Hispanic
0 - 14
15 - 29
30 - 49
50 - 74
75- 100
N
W
E
S
20
0
20
40 Miles

Figure 2

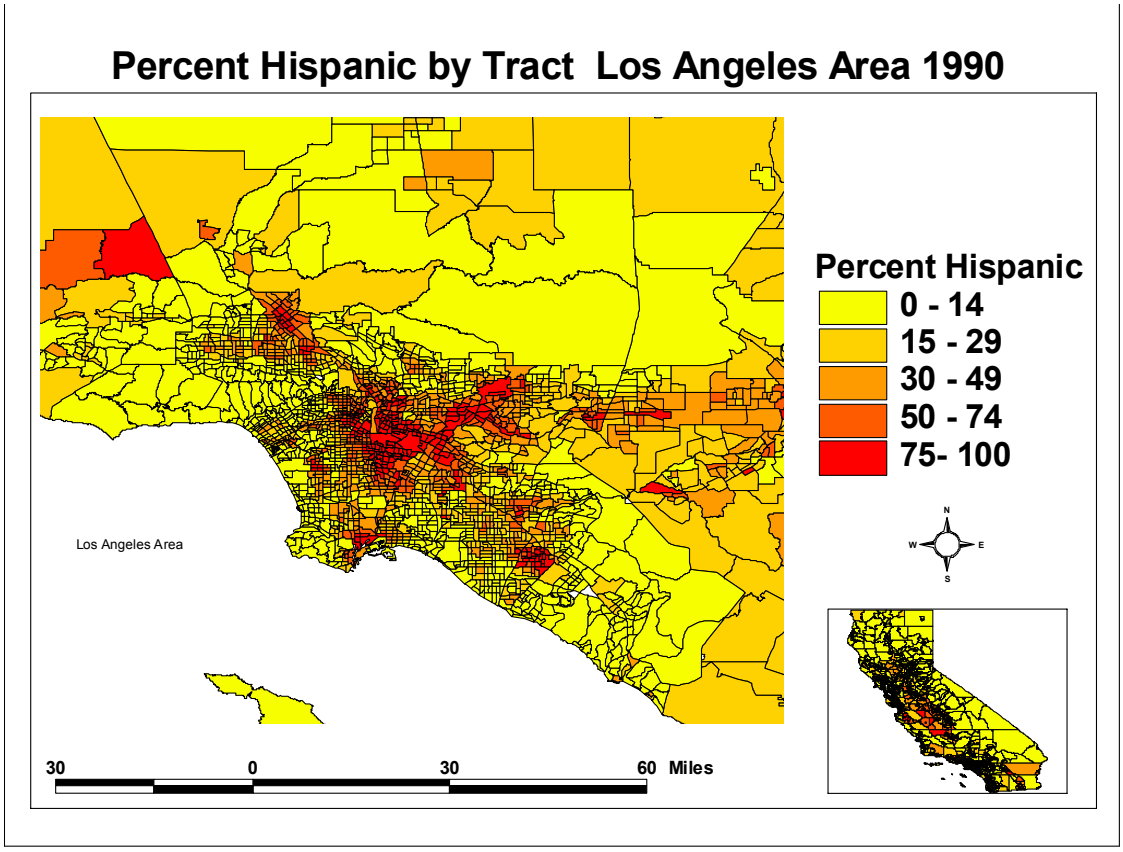

Percent Hispanic by Tract Los Angeles Area 1990
Los Angeles Area
Percent Hispanic
0 - 14
15 - 29
30 - 49
50 - 74
75- 100
N
W
E
S
30
0
30
60 Miles

Figure 3

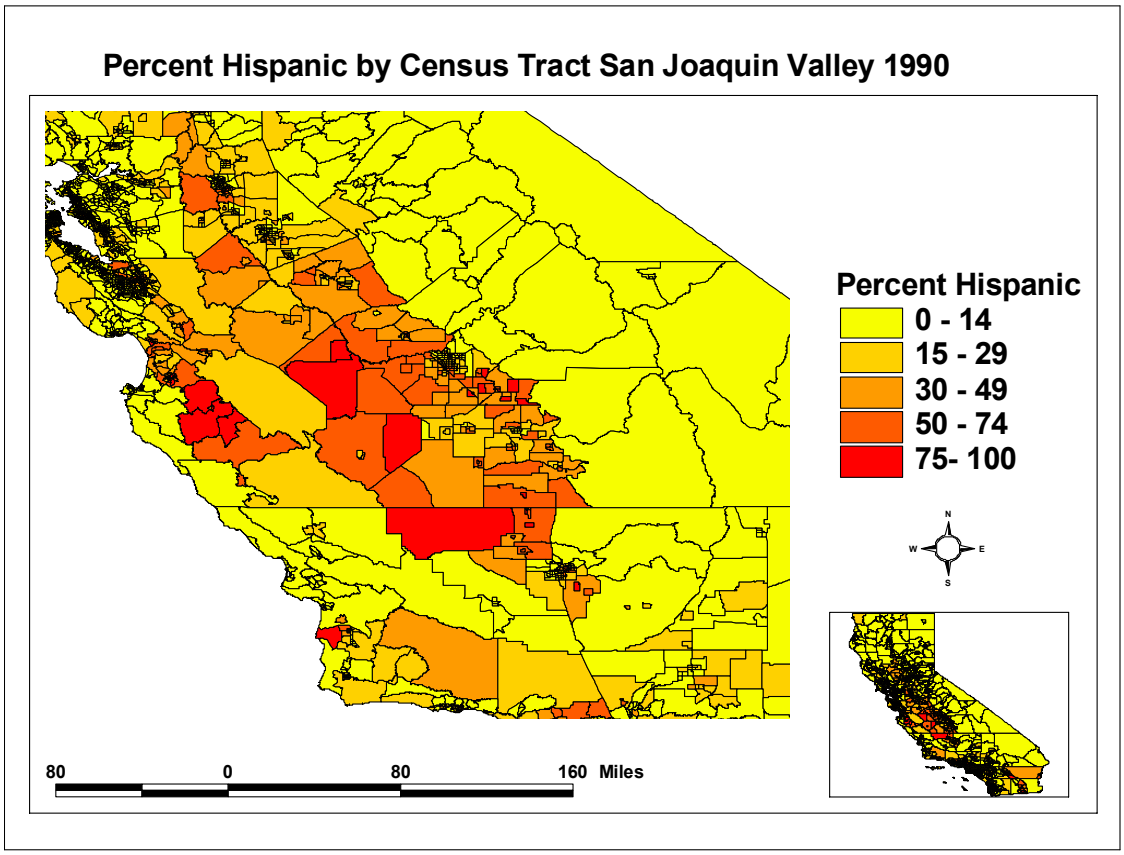
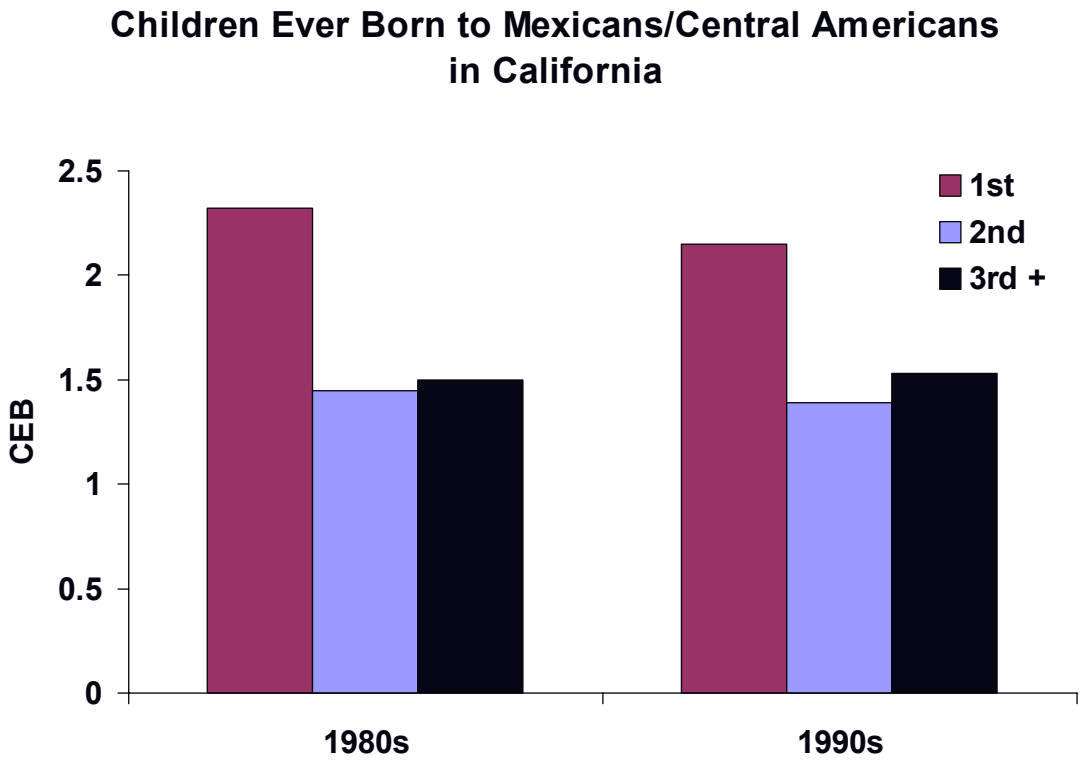
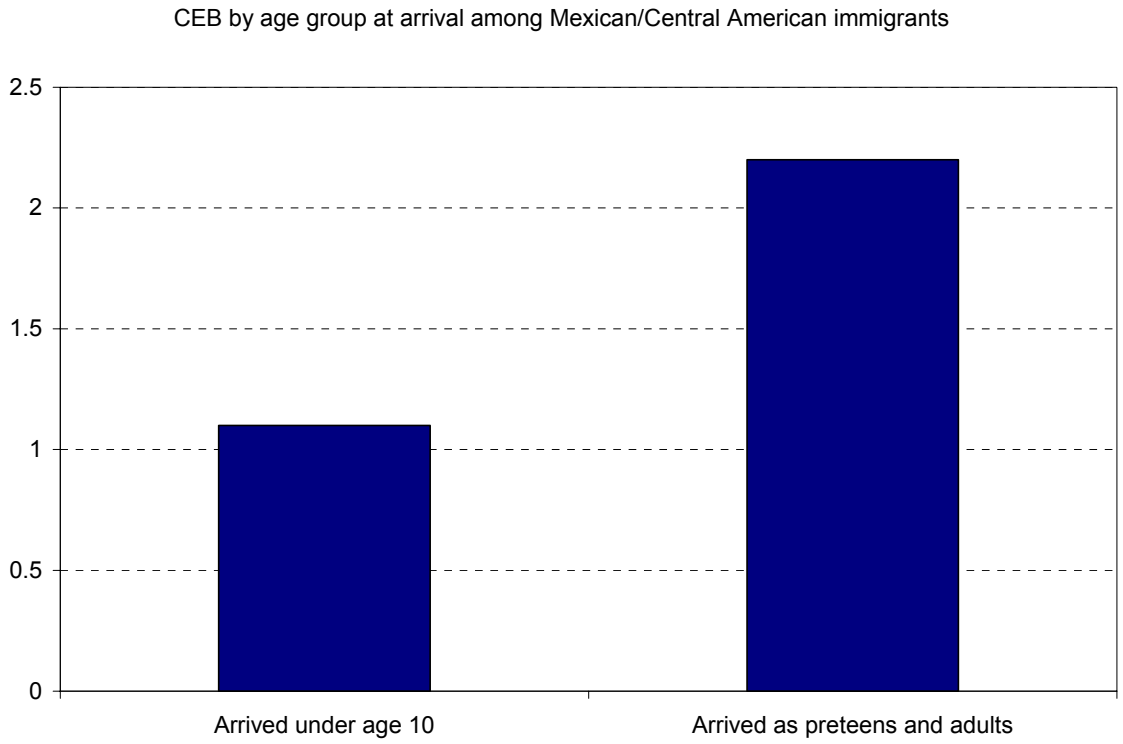

Percent Hispanic by Census Tract San Joaquin Valley 1990
Percent Hispanic
0 - 14
15 - 29
30 - 49
50 - 74
75- 100
N
W
E
S
80
0
80
160 Miles

Figure 4



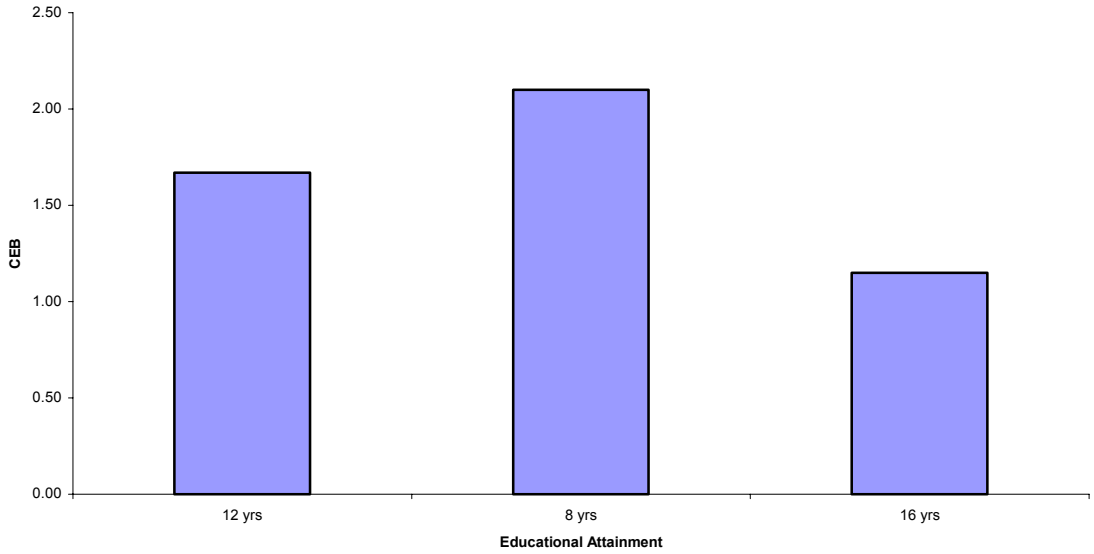
Source: Authors' calculations from Current Population Surveys, June supplements
Note: These figures have been age-standardized using the age distribution of non-Hispanic whites in California in 1986 as the standard.

Figure 5



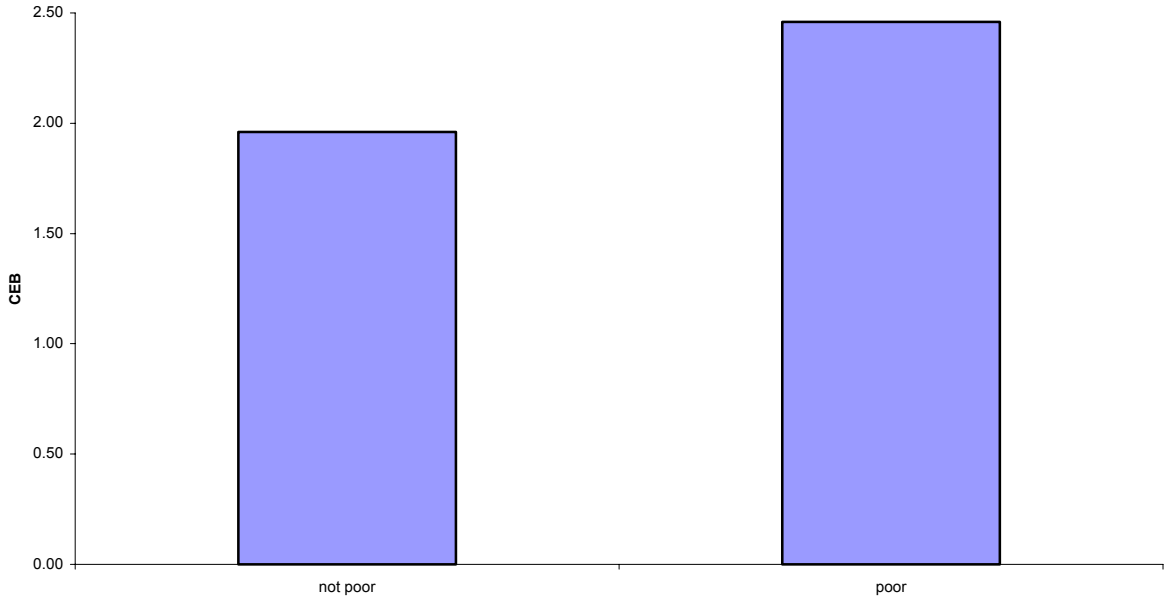
Source: Authors' calculations from Current Population Surveys, 1995 and 1998 June supplements

Figure 6 CEB for Average women by Educational Attainment



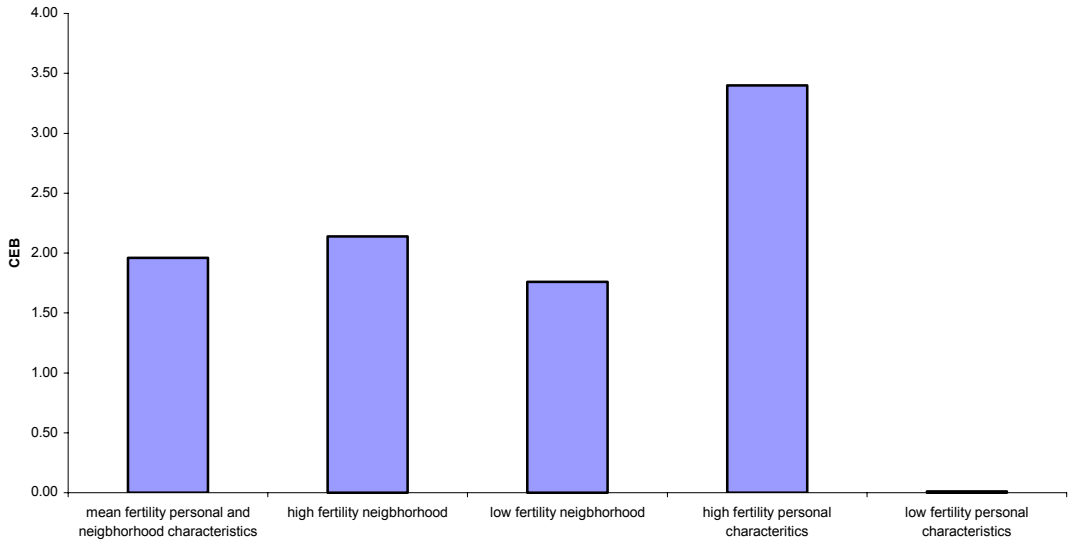
Source: Authors' simulations using coefficient estimates from Table D-1 and sample means

Figure 7 CEB for Average Woman by Poverty Status



Source: Authors' simulations using coefficient estimates from Table D-1 and sample means

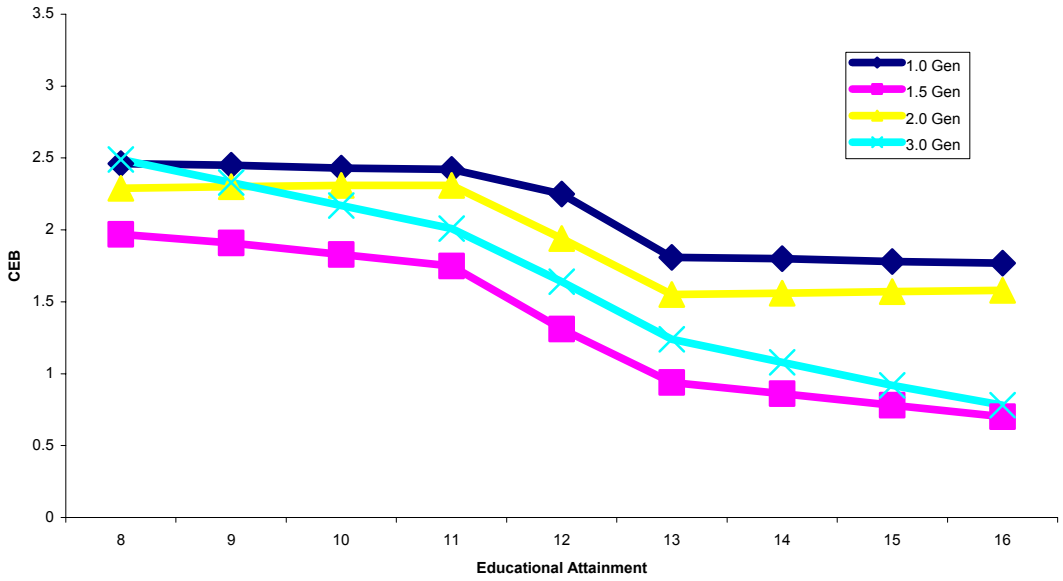
Figure 8 Children Ever Born (CEB) by Neighborhood and Personal Characteristics



Source: Authors' simulations using coefficient estimates from Table D-1 and sample means

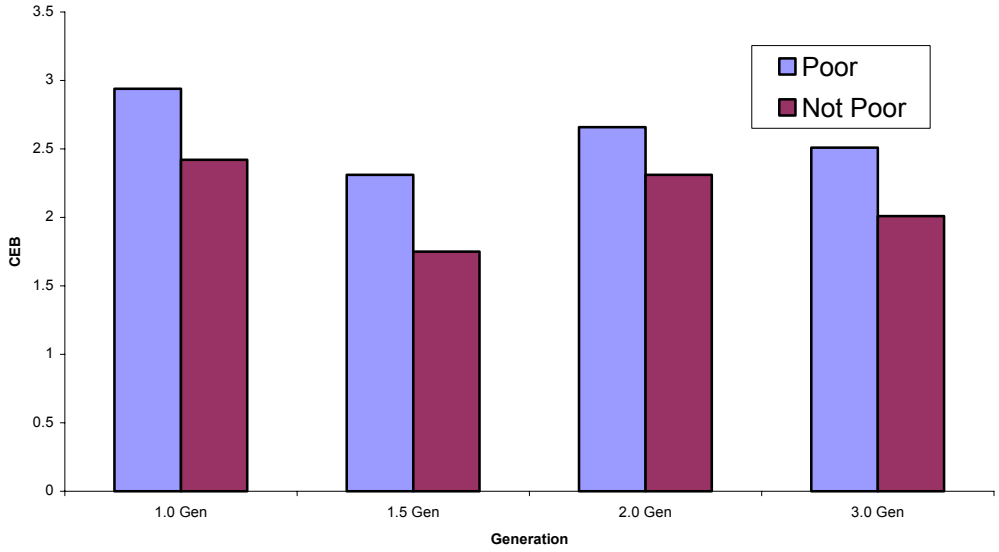
Note: Simulation holds values at average in first column to create simulated CEB for average woman in the average neighborhood. Each subsequent column varies either neighborhood or personal characteristics one standard deviation in either direction to simulate the hypothetical values of CEB under high and low fertility conditions.

Figure 9 CEB for the Average Woman by Educational Attainment and Generation



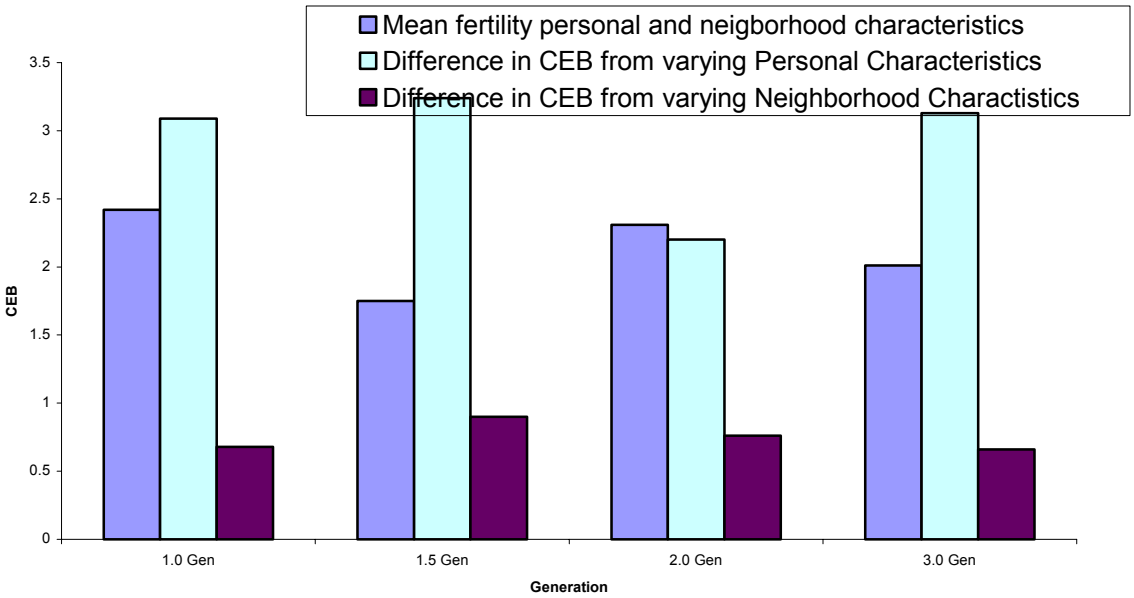
Source: Authors' simulations using coefficient estimates from Table D-2 and sample means

Figure 10 CEB for Average Woman by Poverty Status and Generation



Source: Authors' simulations using coefficient estimates from Table D-2 and sample means

Figure 11 Variation in CEB by Neighborhood and Personal Characteristics



Source: Authors' simulations using coefficient estimates from Table D-2 and sample means

Note: Simulation holds values at average in first column within each generation to create simulated CEB for average woman in the average neighborhood. Each subsequent column plots the difference between simulated high and low values of either personal or neighborhood characteristics (one standard deviation in either direction).

Appendix A: Merging CPS and Census Data

In this appendix, we explain how our data sources (the CPS and Census data) were merged to create a unique source of fertility data that includes information both on individuals and on their neighborhoods. Recall that our individual fertility and nativity data is from the 1995 and 1998 June supplements to the Current Population Survey, and that the neighborhood data is from the 1990 Census Summary Tape Files (3A). Merging these two sources was quite successful; approximately 93 percent of individuals in the CPS were matched with neighborhood data in the U.S. Census files. However, even though such a small proportion of individuals were not successfully matched, we use this appendix to compare the characteristics of those that matched with those that did not.

In order to make the link between the two data sets, state, county, and census tract (neighborhood) variables are required because census tract numbers are only unique within county. Once these links were made, we found that approximately 7 percent of the individuals from the CPS could not be matched with data from the Census. As is seen in Table A-1, there was no appreciable difference in the success rate of the merge between 1995 and 1998. A close inspection of the data revealed that the vast majority of individuals in the CPS whom we could not match with tract data from the Census failed to match because there was no tract number entered in the CPS. There were some cases that failed to merge because the tract numbers entered appeared to be erroneous, but these were relatively few.

We next investigated whether those individuals in the CPS for whom we could match neighborhood data differed from those who did not based on nativity or racial and

ethnic group. In Table A-2 below, it is clear that these differences are minor. Those born in Mexico or other countries besides the U.S. are slightly more likely to have been matched successfully with neighborhood data than those born in the U.S. Similarly, blacks were more likely than whites to have been matched successfully, as were those of Hispanic origin. The higher match rate for these minority groups may suggest that the CPS is not particularly good at capturing representative minorities in its sampling strategy. It suggests that the CPS has success finding a cross section of whites, but the minorities it finds are in more established communities. This is a known problem with the decennial Census, and it is thought to be somewhat worse for the CPS.

For those key racial and ethnic groups, we also compare differences in one of our key fertility measures for those who did and did not merge successfully. Table A-3 displays the difference in Children Ever Born (CEB) for those lost and retained in our merging procedure. It appears that values for CEB that did not merge successfully varied slightly in 1995 from in 1998, although the net differences were small in all cases (greater than one-quarter of a child in only one case). In 1995, the greatest net difference is found among blacks and those of Mexican origin, and in 1998, the greatest net difference is found among those born in Mexico.

Both the number and type of cases that were lost in the merging procedure gave us little concern about the quality of our resulting data set. There were no appreciable differences in types of cases lost according to race/ethnicity or nativity. There were slight differences in the values for CEB that failed to merge, but these depended on the year in question. In order to consider these slight differences in our estimation of the

relationship of immigrant generation and neighborhood, we include dummy variables for year in the models we estimate.

Table A-1 Sample Size

Before and After Merge of 1995/1998 CPS and 1990 Census Data

	June 1995	June 1998
Before Merge	12,344	12,068
After Merge	11,367	11,288
Percent Lost	7.9%	6.5%

Table A-2 Percent Lost in Merge for Key Nativity and Race/ethnicity Groups

	1995	*1998*
Place of Birth		
U.S.	10%	10%
Mexico	7%	7%
Other	8%	10%
Race		
White	11	11
Black	5	5
Hispanic Origin		
Mexican	7	8
Central/South American	4	5

Table A-3 Difference in CEB for those lost and retained in data merge

	1995	*1998*
Place of Birth		
U.S.	0.12	-0.02
Mexico	0.15	-0.13
Other	0.13	-0.02
Race		
White	0.09	-0.03
Black	0.29	0.04
Hispanic Origin		
Mexican	0.20	-0.08
Central/South American	0.19	0.04

Appendix B: Clustering Corrections

The Current Population Survey is not a simple random sample. Because certain tracts are over-sampled, it is necessary to correct standard errors associated with the statistical models employed in our analyses. As shown in Table B-1, clustering by tract is not especially predominant in our sample. The number of respondents per tract is often only one and rarely more than several. Given the general lack of clustering in our sample, it is not surprising that we find (as discussed below) that the correction for clustering does not change our primary findings.

Table B-1

Distribution of Tracts by Number of Observations

Quantile	Number of Observations
100% Max	47
99%	17
95%	8
90%	6
75% Q3	3
50% Median	2
25% Q1	1
10%	1
5%	1
1%	1
0% Min	1

We used Stata statistical software to adjust the standard errors in the regression models employed with our sample. Standard errors adjusted for clustering are only slightly higher than those without adjustments. For example, in OLS regressions on

children ever born for all generations combined, the average standard error was about 1.1 times greater in the regressions adjusting for clustering than in the unadjusted regressions. Standard error corrections were not uniform across all variables; standard error corrections for the coefficients of certain variables were somewhat greater than the average correction. For example, the cluster corrected standard error for the parameter estimate for years of education was 1.3 times greater than the unadjusted standard error. Still, the increase in standard errors associated with the clustering correction did not change our primary findings. With very few exceptions, the significance level of the parameter estimates remain unchanged. And where the significance level did change, it was only for variables which already were only marginally significant. For example, in OLS regressions on children ever born for all generations combined, the significance level changed for only one variable: the percent of Hispanics in poverty in the tract was positively correlated with children ever born at the 10 percent level of significance in the regressions that did not correct for clustering,[23] while it was not significant in the regressions with the clustering correction. Results for other regression models were similar, with significance levels changing only for variables that were marginally significant before the correction.

[23] The magnitude of the effect was small, with a 50 percent increase in the poverty rate associated with only a 0.1 increase in children ever born.

Appendix C: Distributional Assumptions and Allocation in Fertility Data

This appendix addresses two concerns that could affect the results of our multivariate estimations. The first is the distributional assumptions of the estimation techniques we employ, and the second is the degree of allocation in one of our dependent variables, Children Ever Born (CEB).

C.1 Distributional Assumptions

The most common estimation technique, Ordinary Least Squares (OLS), assumes that the data being fitted has a conditional distribution that is Normal, or bell-curved. This is generally not the case with fertility data. By definition, the fertility of individuals is count data – that is, it takes on whole number values. Fractions and decimals are not possible in the measurement of children born to an individual woman. In addition, counts of children can only be positive (zero or greater); and for U.S. data, they tend to have modes of two children per woman, with high numbers of zeros and ones, few of three or more, but can reach as many as twelve or more. Some research has demonstrated that such data is better estimated with methods that assume different conditional distributions, such as the Poisson or Negative Binomial distribution (Wang and Famoye 1997). In this section, we examine which estimation techniques make the most sense given the data we use.

Both the Poisson and Negative Binomial distributions are ideal for estimating models describing count data such as measures of children ever born and current fertility (numbers of children born in the last five years). Both are discrete distributions and use Maximum Likelihood Estimators (MLE). Models estimated using maximum likelihood

produce the estimates that result from the iterative process that will produce the observed data with the greatest probability. In the case of fertility data, MLE estimators should be more efficient estimators than OLS. This means that while the coefficient estimates should be approximately the same, the standard errors will be smaller.

There are a few diagnostic tests for deciding which of the two likely MLE estimation methods should be used in the analysis of the existing data. Below, in Table C-1, we present the results of one such test. In order to use estimation methods relying on the Poisson distribution, the data must be equi-dispersed. This requires that the conditional mean and variance be equal. If the variance is less than the mean, the data are said to be under-dispersed and many researchers use the generalized Poisson regression model. If, on the other hand, the variance is greater than the mean, the data are over-dispersed and estimation methods relying on the Negative Binomial distribution are suggested. The results in Table C-1 indicate that both CEB and current fertility would best be estimated using the generalized Poisson regression models. In both cases, the variance is less than the mean

In practice, we estimated all of our models using OLS and with the generalize Poisson. There are few differences between the OLS and Poisson estimations. Levels of statistical significance vary only slightly, and the relative magnitudes of coefficients change even less. For simplicity, in the body of the report, our figures and discussions were based on the coefficients from the OLS estimation. Appendix D reports both sets of coefficient estimates (OLS and the estimates based on alternative distributions) for each of our dependent variables of interest (CEB and Current Fertility).

C.2 Allocation of Children Ever Born

A second concern is the extent of allocation done by the Current Population Survey in the construction of our key dependent variable: CEB. Because we constructed Current Fertility using household rosters, we do not have concerns about allocation in that variable. Most women answered the question about the number of live births they had ever had, but approximately 9 percent did not. For that 9 percent, the CPS allocated children ever born using household rosters. Below, we examine how prevalent the allocation of CEB is by year and by other important variables in our sample of Mexican and Central American women. Sample size is sufficiently large in 1995 to provide breakdowns by these variables, but it is not in 1998.[24]

Clearly, allocation is a larger problem in 1995 than in 1998. This may explain why some of the multivariate estimates found that fertility was significantly lower in 1995 than in 1998. Greater use of allocation in 1995 may have led to underestimates of CEB. In addition, we find that CEB is more likely to be allocated for first generation Mexican and Central American women than for the second and third generation combined. Lack of English language proficiency may explain some of this increased allocation for the first generation relative to the others. Perhaps the respondent did not understand the question and gave no answer or one that was recoded by the interviewer later. However, individuals in neighborhoods with higher concentrations of Hispanics do not appear to be different in terms of levels of CEB allocation.

In order to assess the possible impact of allocation in our dependent variable, we estimated all CEB models without the individuals where CEB had been allocated. We

[24] Sample size was less than 75, the minimum required for disclosure when using restricted access data through the CCRDC.

cannot report those coefficients here due to confidentiality concerns, but the results are essentially unchanged. We find that the dummy for 1995 is no longer significant once allocated CEB records are dropped in estimations where generations are combined, but that it retains its significance for the third generation, although its magnitude is decreased. We conclude, therefore, that allocation is not a serious problem in our measure of CEB.

Table C-1 Conditional Distribution of Data

	CEB	Current Fertility
Mean	1.60	0.43
Variance	1.39	0.33

Note: Mean and variance are conditioned on personal and neighborhood characteristics.

Table C-2 Allocation of CEB

	Percent Allocated
Overall	9
1995	12
1998	7
By Generation	
1st	11
2nd plus	7
Percent Hispanic in Tract	
<30%	10
>=30%	9
Language	
Speak Spanish Only	10
Don't Speak Spanish Only	6

Appendix D: Regression Results

Table D-1

CEB
Combined Generations
OLS

	Model I		Model II	
	Estimate	SE	Estimate	SE
Intercept	-2.5497	0.4467	-2.2153	0.4902
Generation 1.5	0.1526	0.0720	0.1456	0.0721
Generation 2	0.1297	0.0633	0.1183	0.0636
Generation 3	0.1701	0.0543	0.1514	0.0552
Age	0.2491	0.0241	0.2482	0.0242
Age^2	-0.0030	0.0004	-0.0031	0.0004
Hispanic	-0.0463	0.0817	-0.0307	0.0824
Years of Education	-0.1049	0.0390	-0.1113	0.0394
Currently Enrolled	-0.1602	0.5827	-0.1444	0.5830
Only High School Diploma	0.5783	0.2253	0.5875	0.2255
Some College or More	0.2476	0.2808	0.2607	0.2814
Married	-0.7551	0.2259	-0.7583	0.2259
Previously Married	0.8712	0.0796	0.8661	0.0796
Spanish Only	-0.3066	0.2602	-0.2999	0.2615
In Poverty	0.4941	0.0413	0.4933	0.0416
Age*Years of Educ	0.0007	0.0012	0.0008	0.0012
Age*Enrolled	-0.0320	0.0364	-0.0327	0.0364
Age*Only HS Diploma	-0.0283	0.0076	-0.0286	0.0076
Age*Some College or More	-0.0292	0.0095	-0.0293	0.0095
Age*Married	0.0394	0.0061	0.0391	0.0061
Age*Spanish Only	-0.0050	0.0068	-0.0050	0.0068
Age*Poverty	0.0001	0.0001	0.0002	0.0002
Years of Educ*Enrolled	0.0640	0.0461	0.0642	0.0461
Years of Educ*Married	0.0415	0.0123	0.0417	0.0123
Years of Educ*Spanish Only	0.0357	0.0153	0.0360	0.0153
Years of Educ*Poverty	-0.0001	0.0003	0.0001	0.0004
1995 CPS	-0.0413	0.0377	-0.0383	0.0377
California	0.0100	0.0404	0.0705	0.0461
% Hispanic in Neighborhood			-0.0014	0.0008
% Asian in Neighborhood			-0.0062	0.0026
% Hispanics in Poverty			-0.0037	0.0061
% Women Work			-0.0030	0.0024
% Immigrants that are Recent			-0.0014	0.0016
Adj R^2	0.4684		0.4692	

Table D-2

CEB
Each Generation
OLS

	Gen 1.0		Gen 1.5		Gen 2.0		Gen 3.0	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	-2.2574	0.9357	-1.8882	1.7323	-0.0938	1.0357	-2.0901	0.9203
Age	0.2483	0.0465	0.2261	0.0914	0.1785	0.0522	0.2773	0.0421
Age^2	-0.0029	0.0007	-0.0021	0.0013	-0.0030	0.0009	-0.0035	0.0006
Hispanic	-0.1608	0.1688	0.2204	0.2071	-0.0232	0.0977		
Years of Education	-0.0582	0.0651	-0.1509	0.1565	-0.2606	0.1050	-0.1850	0.0875
Currently Enrolled	0.8227	2.0606	-1.7415	1.3071	-0.1066	0.8186	-0.0301	0.8887
Only High School Diploma	0.3155	0.4774	1.2888	0.6779	1.2053	0.4687	0.6201	0.3415
Some College or More	-0.2674	0.6446	1.2705	0.8637	1.2242	0.5824	0.2124	0.4413
Married	-0.9301	0.3927	-1.6857	0.7536	-0.4195	0.5487	0.0661	0.5022
Previously Married	0.8302	0.1497	1.1235	0.2481	0.8938	0.1695	0.7840	0.1168
Spanish Only	0.1961	0.3822	-0.7429	0.9255	-1.3475	1.0560	-1.2031	1.3633
In Poverty	0.5352	0.0704	0.5388	0.1240	0.3446	0.0834	0.4812	0.0726
Recent Immigrant	-0.3668	0.0860						
Age*Years of Educ	0.0000	0.0019	-0.0011	0.0060	0.0073	0.0036	0.0009	0.0028
Age*Enrolled	-0.0241	0.1085	-0.0342	0.0831	-0.0305	0.0576	-0.1100	0.0625
Age*Only HS Diploma	-0.0163	0.0152	-0.0567	0.0261	-0.0549	0.0180	-0.0289	0.0115
Age*Some College or More	-0.0107	0.0201	-0.0663	0.0326	-0.0692	0.0228	-0.0232	0.0149
Age*Married	0.0455	0.0112	0.0505	0.0206	0.0185	0.0151	0.0258	0.0098
Age*Spanish Only	-0.0164	0.0103	-0.0314	0.0265	-0.0187	0.0287	0.0189	0.0285
Age*Poverty	-0.0001	0.0003	0.0006	0.0005	0.0011	0.0003	0.0000	0.0002

Years of Educ*Enrolled	-0.0431	0.0900	0.2066	0.1173	0.0603	0.0822	0.1793	0.0903
Years of Educ*Married	0.0446	0.0191	0.1032	0.0511	0.0584	0.0444	0.0012	0.0350
Years of Educ*Spanish Only	0.0315	0.0195	0.1268	0.0689	0.1603	0.0957	0.0214	0.1151
Years of Educ*Poverty	-0.0010	0.0006	0.0007	0.0017	-0.0024	0.0011	0.0017	0.0009
1995 CPS	0.0474	0.0682	0.0426	0.1158	-0.0960	0.0742	-0.1299	0.0615
California	0.0111	0.0773	0.1009	0.1326	0.0876	0.0900	0.1776	0.0856
Neighborhood Variables								
% Adults Hispanic	-0.0027	0.0014	0.0020	0.0024	-0.0039	0.0016	0.0000	0.0013
% Adults API	-0.0109	0.0046	-0.0127	0.0081	0.0032	0.0047	-0.0046	0.0047
% Hispanics in Poverty	0.0120	0.0124	-0.0200	0.0207	0.0065	0.0120	-0.0160	0.0116
% Women Work	-0.0058	0.0042	0.0007	0.0072	-0.0092	0.0046	0.0036	0.0039
% Immigrants Recent	0.0006	0.0028	0.0016	0.0052	-0.0036	0.0032	-0.0015	0.0025
Adj R^2	0.3597		0.5111		0.5093		0.4881	

Table D-3

CF
OLS
Combined generations

	Model I		Model II	
	Estimate	SE	Estimate	SE
Intercept	-0.8304	0.2208	-0.7729	0.2426
Generation 1.5	-0.0362	0.0356	-0.0373	0.0357
Generation 2	0.0054	0.0313	0.0055	0.0315
Generation 3	-0.0154	0.0269	-0.0140	0.0273
Age	0.1149	0.0119	0.1154	0.0120
Age^2	-0.0023	0.0002	-0.0023	0.0002
Hispanic	-0.0060	0.0404	-0.0093	0.0408
Years of Education	-0.0418	0.0193	-0.0403	0.0195
Currently Enrolled	-0.3704	0.2881	-0.3634	0.2885
Only High School Diploma	0.1073	0.1114	0.1078	0.1116
Some College or More	-0.3388	0.1388	-0.3336	0.1393
Married	0.7576	0.1117	0.7564	0.1118
Previously Married	0.1833	0.0394	0.1847	0.0394
Spanish Only	-0.1356	0.1286	-0.1463	0.1294
In Poverty	0.1566	0.0204	0.1533	0.0206
Age*Years of Educ	0.0007	0.0006	0.0007	0.0006
Age*Enrolled	0.0057	0.0180	0.0053	0.0180
Age*Only HS Diploma	-0.0039	0.0038	-0.0039	0.0038
Age*Some College or More	0.0082	0.0047	0.0080	0.0047
Age*Married	-0.0184	0.0030	-0.0183	0.0030
Age*Spanish Only	0.0032	0.0034	0.0034	0.0034
Age*Poverty	0.0000	0.0001	-0.0001	0.0001
Years of Educ*Enrolled	0.0128	0.0228	0.0128	0.0228
Years of Educ*Married	0.0166	0.0061	0.0165	0.0061
Years of Educ*Spanish Only	0.0075	0.0076	0.0079	0.0076
Years of Educ*Poverty	0.0002	0.0001	0.0001	0.0002
1995 CPS	-0.0107	0.0186	-0.0111	0.0187
California	0.0126	0.0200	0.0155	0.0228
% Hispanic in Neighborhood			-0.0002	0.0004
% Asian in Neighborhood			-0.0011	0.0013
% Hispanics in Poverty			0.0011	0.0030
% Women Work			-0.0016	0.0012
% Immigrants that are Recent			0.0007	0.0008
Adjusted R^2	0.2271		0.2268	

Table D-4

CF
each Generation
OLS

	Gen 1.0		Gen 1.5		Gen 2.0		Gen 3.0	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	-0.3761	0.4469	-1.8403	0.8919	-0.2454	0.5897	-0.9314	0.4576
Age	0.0927	0.0222	0.2383	0.0470	0.1270	0.0297	0.1193	0.0210
Age^2	-0.0019	0.0003	-0.0041	0.0007	-0.0036	0.0005	-0.0021	0.0003
Hispanic	-0.0131	0.0806	0.1178	0.1066	-0.0237	0.0556		
Years of Education	-0.0448	0.0311	-0.1469	0.0806	-0.1452	0.0598	-0.0158	0.0435
Currently Enrolled	-0.2590	0.9842	-0.1778	0.6730	-0.0383	0.4661	-0.7512	0.4419
Only High School Diploma	0.1627	0.2280	0.5962	0.3490	-0.1333	0.2669	0.0871	0.1698
Some College or More	-0.3900	0.3079	-0.3302	0.4447	-0.2056	0.3316	-0.4690	0.2194
Married	0.7270	0.1876	0.1836	0.3880	1.3915	0.3125	0.5878	0.2497
Previously Married	0.1404	0.0715	0.1859	0.1278	0.2548	0.0965	0.2141	0.0581
Spanish Only	0.0825	0.1825	-0.2278	0.4765	-0.9984	0.6013	-1.4020	0.6779
In Poverty	0.1440	0.0336	0.1740	0.0638	0.1589	0.0475	0.1592	0.0361
Recent Immigrant	-0.0524	0.0411						
Age*Years of Educ	0.0007	0.0009	0.0009	0.0031	0.0055	0.0020	-0.0006	0.0014
Age*Enrolled	0.0283	0.0518	-0.0755	0.0428	-0.0211	0.0328	0.0199	0.0311
Age*Only HS Diploma	-0.0041	0.0073	-0.0229	0.0134	0.0009	0.0102	-0.0031	0.0057
Age*Some College or More	0.0109	0.0096	0.0068	0.0168	0.0038	0.0130	0.0119	0.0074
Age*Married	-0.0182	0.0053	-0.0312	0.0106	-0.0074	0.0086	-0.0171	0.0049
Age*Spanish Only	-0.0030	0.0049	0.0066	0.0136	0.0051	0.0163	0.0277	0.0142
Age*Poverty	0.0001	0.0002	-0.0005	0.0003	0.0001	0.0002	-0.0002	0.0001
Years of Educ*Enrolled	-0.0473	0.0430	0.1327	0.0604	0.0317	0.0468	0.0249	0.0449

Years of Educ*Married	0.0230	0.0091	0.0852	0.0263	-0.0515	0.0253	0.0219	0.0174
Years of Educ*Spanish Only	0.0053	0.0093	0.0179	0.0355	0.0824	0.0545	0.0448	0.0572
Years of Educ*Poverty	0.0000	0.0003	0.0018	0.0009	-0.0005	0.0006	0.0006	0.0004
1995 CPS	0.0516	0.0326	0.0059	0.0596	-0.0819	0.0423	-0.0573	0.0306
California	0.0180	0.0369	-0.0772	0.0683	0.0090	0.0512	0.0403	0.0426
% Hispanic in Neighborhood	-0.0001	0.0007	0.0017	0.0013	-0.0009	0.0009	-0.0007	0.0006
% Asian in Neighborhood	-0.0020	0.0022	-0.0011	0.0042	0.0006	0.0027	-0.0011	0.0024
% Hispanics in Poverty	-0.0047	0.0059	-0.0079	0.0106	0.0056	0.0068	0.0004	0.0058
% Women Work	-0.0021	0.0020	0.0026	0.0037	-0.0033	0.0026	-0.0007	0.0019
% Immigrants that are Recent	0.0004	0.0013	0.0009	0.0027	-0.0004	0.0018	0.0011	0.0012
Adj R^2	0.1848		0.2807		0.2671		0.2101	

Table D-5

CEB
Combined Generations
Poisson

	Model I		Model II	
	Estimate	SE	Estimate	SE
Intercept	-4.5275	0.3973	-4.5249	0.4364
Generation 1.5	0.0997	0.0539	0.0945	0.0541
Generation 2	0.0827	0.0489	0.0732	0.0493
Generation 3	0.0958	0.0368	0.0847	0.0375
Age	0.2941	0.0196	0.2966	0.0200
Age^2	-0.0039	0.0003	-0.0039	0.0003
Hispanic	-0.0224	0.0619	-0.0154	0.0622
Years of Education	-0.0977	0.0313	-0.0982	0.0316
Currently Enrolled	-3.2204	1.0446	-3.1628	1.0469
Only High School Diploma	0.2427	0.1946	0.2853	0.1953
Some College or More	-0.9453	0.2675	-0.8900	0.2689
Married	0.3241	0.1681	0.3214	0.1684
Previously Married	0.5318	0.0548	0.5307	0.0548
Spanish Only	-0.1240	0.2055	-0.1435	0.2060
In Poverty	0.3273	0.0283	0.3235	0.0285
Age*Years of Educ	0.0011	0.0009	0.0013	0.0009
Age*Enrolled	0.1638	0.0527	0.1619	0.0527
Age*Only HS Diploma	-0.0112	0.0058	-0.0125	0.0058
Age*Some College or More	0.0154	0.0079	0.0137	0.0079
Age*Married	-0.0025	0.0045	-0.0027	0.0045
Age*Spanish Only	-0.0018	0.0054	-0.0013	0.0054
Age*Poverty	-0.0001	0.0001	-0.0002	0.0001
Years of Educ*Enrolled	-0.0431	0.0630	-0.0443	0.0631
Years of Educ*Married	0.0402	0.0078	0.0403	0.0078
Years of Educ*Spanish Only	0.0139	0.0095	0.0148	0.0095
Years of Educ*Poverty	0.0004	0.0002	0.0003	0.0002
1995 CPS	-0.0295	0.0258	-0.0287	0.0259
California	0.0096	0.0275	0.0493	0.0317
% Hispanic in Neighborhood			-0.0008	0.0005
% Asian in Neighborhood			-0.0046	0.0020
% Hispanics in Poverty			0.0061	0.0050
% Women Work			-0.0016	0.0016
% Immigrants that are Recent			-0.0005	0.0011
Log Likelihood	-1608		-1603	

Table D-6

CEB
each Generation
Poisson

	Gen 1.0		Gen 1.5		Gen 2.0		Gen 3.0	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	-3.5223	0.6313	-5.1653	1.8145	-3.4054	1.5152	-4.1259	1.1123
Age	0.2367	0.0305	0.3922	0.0859	0.3149	0.0609	0.3154	0.0413
Age^2	-0.0031	0.0004	-0.0054	0.0012	-0.0049	0.0009	-0.0043	0.0005
Years of Education	-0.0648	0.0401	-0.2467	0.1467	-0.2962	0.1498	-0.1951	0.1035
Currently Enrolled	-1.9786	3.5404	-9.2907	3.1583	-1.0119	1.9182	-3.9795	1.9589
Only High School Diploma	-0.0493	0.3139	0.8247	0.6952	0.8794	0.5973	0.3977	0.3646
Some College or More	-1.1740	0.4676	-0.2539	0.9425	-0.0651	0.8338	-0.8014	0.5281
Married	0.1009	0.2503	-0.0563	0.6694	0.4094	0.5422	0.4261	0.399
Previously Married	0.4140	0.0823	0.6868	0.1889	0.6887	0.1647	0.5463	0.0935
Spanish Only	0.0856	0.2340	-0.1791	0.9762	-2.0525	1.5392	-2.8182	1.6102
In Poverty	0.2625	0.0373	0.4942	0.1117	0.4515	0.0950	0.3525	0.0578
Recent Immigrant	-0.2014	0.0499						
Age*Years of Educ	0.0008	0.0011	0.0028	0.0050	0.0061	0.0043	0.0017	0.0029
Age*Enrolled	0.1550	0.1722	0.1805	0.1485	0.2112	0.1052	0.0180	0.105
Age*Only HS Diploma	-0.0019	0.0093	-0.0331	0.0235	-0.0285	0.0191	0.0138	0.0106
Age*Some College or More	0.0225	0.0133	-0.0071	0.0310	-0.0083	0.0265	0.0157	0.0151
Age*Married	0.0036	0.0069	-0.0124	0.0173	-0.0146	0.0142	0.0092	0.0081
Age*Spanish Only	-0.0063	0.0063	-0.0306	0.0277	0.0024	0.0367	0.1076	0.055
Age*Poverty	-0.0002	0.0002	-0.0003	0.0005	-0.0001	0.0003	0.0004	0.0002
Years of Educ*Enrolled	-0.1965	0.0883	0.4640	0.2345	-0.3027	0.1488	0.3316	0.1815
Years of Educ*Married	0.0365	0.0107	0.1162	0.0439	0.0755	0.0418	0.0484	0.0256
Years of Educ*Spanish Only	0.0122	0.0102	0.1113	0.0601	0.1827	0.1122	0.1185	0.1213

Years of Educ*Poverty	-0.0004	0.0003	0.0013	0.0014	-0.0006	0.0010	0.0016	0.0007
1995 CPS	0.0192	0.0354	0.0131	0.1056	-0.1549	0.0823	0.0890	0.0503
California	0.0090	0.0406	0.0833	0.1170	0.0759	0.1067	0.1817	0.0711
% Hispanic in Neighborhood	-0.0013	0.0007	0.0027	0.0022	-0.0022	0.0018	0.0002	0.0011
% Asian in Neighborhood	-0.0054	0.0026	-0.0080	0.0066	0.0040	0.0057	0.0046	0.0044
% Hispanics in Poverty	0.0084	0.0075	-0.0047	0.0214	0.0154	0.0146	0.0016	0.0113
% Women Work	-0.0024	0.0022	-0.0007	0.0067	-0.0064	0.0048	0.0038	0.0033
% Immigrants that are Recent	0.0005	0.0015	0.0025	0.0047	-0.0038	0.0031	0.0011	0.0021
Log Likelihood								
	-409		-169		-355		-602	

Table D-7

CF
Poisson
Combined Generation

	Model I		Model II	
	Estimate	SE	Estimate	SE
Intercept	-6.3494	0.7265	-6.2410	0.7910
Generation 1.5	-0.0549	0.0930	-0.0609	0.0932
Generation 2	0.0488	0.0859	0.0426	0.0863
Generation 3	-0.0202	0.0739	-0.0265	0.0751
Age	0.4617	0.0407	0.4666	0.0413
Age^2	-0.0087	0.0006	-0.0087	0.0006
Hispanic	-0.0065	0.1184	-0.0171	0.1191
Years of Education	-0.0653	0.0590	-0.0644	0.0595
Currently Enrolled	-2.4594	1.3830	-2.4251	1.3868
Only High School Diploma	0.3311	0.3687	0.3631	0.3702
Some College or More	-1.4349	0.5033	-1.3763	0.5073
Married	0.4721	0.3285	0.4717	0.3297
Previously Married	0.5298	0.1124	0.5306	0.1126
Spanish Only	-0.4174	0.3756	-0.4419	0.3771
In Poverty	0.3683	0.0540	0.3591	0.0544
Age*Years of Educ	-0.0006	0.0019	-0.0005	0.0019
Age*Enrolled	0.1445	0.0698	0.1427	0.0699
Age*Only HS Diploma	-0.0130	0.0133	-0.0141	0.0134
Age*Some College or More	0.0411	0.0176	0.0391	0.0178
Age*Married	-0.0146	0.0101	-0.0148	0.0101
Age*Spanish Only	0.0118	0.0113	0.0125	0.0114
Age*Poverty	-0.0001	0.0002	-0.0003	0.0003
Years of Educ*Enrolled	-0.0927	0.0775	-0.0921	0.0775
Years of Educ*Married	0.0770	0.0168	0.0773	0.0168
Years of Educ*Spanish Only	0.0156	0.0186	0.0161	0.0187
Years of Educ*Poverty	0.0005	0.0004	0.0003	0.0005
1995 CPS	-0.0337	0.0500	-0.0373	0.0503
California	0.0234	0.0534	0.0334	0.0609
% Hispanic in Neighborhood			-0.0002	0.0011
% Asian in Neighborhood			-0.0034	0.0037
% Hispanics in Poverty			0.0048	0.0093
% Women Work			-0.0042	0.0032
% Immigrants that are Recent			0.0007	0.0020
Log Likelihood	-2549		-2547	

Table D-8

CF
each Generation
Poisson

	Gen 1.0		Gen 1.5		Gen 2.0		Gen 3.0	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	-3.9608	1.0821	-8.7711	3.3836	-6.6190	2.5647	-7.5250	2.1627
Age	0.3203	0.0580	0.7340	0.1750	0.6929	0.1328	0.6630	0.0995
Age^2	-0.0066	0.0009	-0.0126	0.0026	-0.0171	0.0026	-0.0124	0.0015
Years of Education	-0.0957	0.0751	-0.3545	0.2738	-0.4339	0.2662	-0.1614	0.2094
Currently Enrolled	-6.5600	5.7305	-4.4332	5.8725	0.5580	2.6875	-4.2480	2.3454
Only High School Diploma	0.2662	0.5867	1.8421	1.2821	-0.9827	1.1873	0.1048	0.7377
Some College or More	-1.1394	0.8327	-1.3588	1.7451	-2.2949	1.5807	-1.9537	1.0816
Married	0.4166	0.4824	0.5910	1.1832	0.8730	0.9354	-0.3867	0.8625
Previously Married	0.3782	0.1829	0.4625	0.3608	0.7629	0.2956	0.6407	0.1857
Spanish Only	0.2560	0.4329	0.3591	1.7067	-3.1199	2.6064	-8.4909	4.2934
In Poverty	0.2721	0.0732	0.3766	0.1810	0.5935	0.1636	0.4540	0.1157
Recent Immigrant	-0.0888	0.0854						
Age*Years of Educ	0.0008	0.0024	0.0027	0.0105	0.0156	0.0095	-0.0009	0.0075
Age*Enrolled	0.3816	0.2787	0.5651	0.4033	0.0527	0.1707	0.0864	0.1216
Age*Only HS Diploma	-0.0070	0.0202	0.0738	0.0505	0.0310	0.0456	-0.0021	0.0279
Age*Some College or More	0.0347	0.0276	0.0340	0.0656	0.0778	0.0606	0.0595	0.0398
Age*Married	-0.0104	0.0152	0.0837	0.0378	0.0130	0.0353	-0.0188	0.0211
Age*Spanish Only	-0.0090	0.0132	0.0128	0.0508	0.0454	0.0651	0.2215	0.0987
Age*Poverty	0.0007	0.0004	0.0010	0.0011	0.0000	0.0009	-0.0009	0.0006
Years of Educ*Enrolled	-0.2342	0.1109	1.2316	0.7785	0.1937	0.2503	0.1862	0.2221
Years of Educ*Married	0.0719	0.0229	0.2169	0.0715	0.0067	0.0746	0.1504	0.064
Years of Educ*Spanish Only	0.0087	0.0200	0.0417	0.0953	0.1918	0.1772	0.1303	0.3312

Years of Educ*Poverty	0.0001	0.0007	0.0039	0.0026	0.0018	0.0020	0.0021	0.0017
1995 CPS	0.1006	0.0714	0.0204	0.1775	0.3726	0.1413	-0.1865	0.1043
California	0.0313	0.0805	0.1134	0.1984	0.0528	0.1694	0.0931	0.1478
% Hispanic in Neighborhood	0.0000	0.0015	0.0061	0.0038	0.0017	0.0030	-0.0021	0.0021
% Asian in Neighborhood	-0.0042	0.0050	0.0040	0.0120	0.0055	0.0094	-0.0061	0.0097
% Hispanics in Poverty	-0.0201	0.0141	0.0206	0.0393	0.0247	0.0215	0.0022	0.0229
% Women Work	-0.0040	0.0043	0.0056	0.0107	0.0114	0.0089	-0.0022	0.0068
% Immigrants that are Recent	0.0003	0.0029	0.0034	0.0072	0.0030	0.0053	0.0030	0.0041
Log Likelihood								
	-1233		-221		-362		-666	